acute septicaemia. When the abscess is of the chronic type it may give rise to a low grade of general sepsis, resulting in such diseases as those just mentioned under class (b).

The Bacillus pulpae pyogenes of Miller is generally thought to be the organism responsible for the establishment of acute dento-alveolar abscess. It is found in decomposing and gangrenous pulps and in putrescent root-canals. It is exceedingly virulent. White mice, when inoculated with it by injection into the peritoneal cavity, die in from 18 to 20 hours.

When a tooth is the seat of an acute dento-alveolar abscess, there is always a considerable involvement of the bony structure at the epex of the root, and, sooner or later, the abscess points through the external plate of the alveolar process, generally toward the lip or cheek, or it may seek an exit along the side of the root, discharging at the margin of the gum. Occasionally it points toward the tongue, this more often in the lower jaw than the upper for reasons that are patent. Sometimes the swelling is very great. When associated with the upper jaw it not infrequently closes the eye; and when located in the lower jaw, in the region of the molars, it may be so extensive as to make deglutition impossible, and greatly obstruct breathing. This condition is sometimes erroneously diagnosed as Ludwig's Angina.

A chronic dento-alveolar abscess is usually the sequel of an acute abscess which has established a fistula. These conditions, if untreated, may persist for months or years without causing any alarming objective symptoms. There is generally a constant discharge of pus into the mouth, and the predominant micro-organism present is usually the streptococcus viridans. This is the organism which, according to Billings, Rosenow, Hartzell and others, seems to be the chief factor in the production of so many of the diseases which we now know have a septic origin.

The treatment in the acute cases, if the temperature goes above 100° F. should be immediate evacuation of the pus, if it can be reached, or failing in this the extraction of the tooth. Acute septicaemia is to be feared if prompt removal of the focus of infection is not obtained.

(To be concluded in November, 1916.)

ROCKY MOUNTAIN SPOTTED FEVER—ITS PREVALENCE AND DISTRIBUTION IN MODOC AND LASSEN COUNTIES, CALIFORNIA—A PRELIMINARY REPORT.

By FRANK L. KELLY, M. D., Gr. P. H.,

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Acting under instructions from Dr. J. G. Cumming, director of the Bureau of Communicable Diseases, California State Board of Health, I made in May, 1916, an investigation in order to determine the prevalence and geographic distribution of Rocky Mountain spotted fever in Modoc and Lassen Counties. Although for several years the disease has been known to be present in the northern part of the state,[1 2 3 4] this was the first attempt made to definitely establish its existence and to study its distribution. The information was obtained from personal observations of cases, from interviews with physicians, and from replies to letters sent to each physician in Modoc and Lassen Counties. I wish to acknowledge with thanks the hearty co-operation received from the physicians in both counties, and to particularly thank Dr. W. E. Dozier, County Health Officer of Lassen County, through whose courtesy I was enabled to see four cases of this disease.

The first case seen was of a mild type. The patient, C. A., a former State Board of Health Inspector, contracted the disease in Secret Valley, ten or twelve miles west of the California-Nevada line. When seen by me, he had been ill for about ten days and gave a history typical of Rocky Mountain spotted fever. About a week after being bitten by ticks, the evidence of which was still present at the time of my inspection, he was taken with a severe headache, intense pain in the muscles and joints, particularly in the wrists, ankles and calves, a chill, a slight rise in temperature, and obstinate constipation. The muscle and joint pains grew worse, his temperature increased, and at times he became slightly delirious. On the third day, a macular roseolar eruption appeared over the forehead and upper thorax, followed in about twenty-four hours by the characteristic petechial eruption. When seen by me the rash consisted of a petechial eruption covering the whole body and involving the forehead, scalp, palms of the hands and soles of the feet. The hemorrhagic spots were for the most part discrete and had become confluent only in a few places. His temperature when seen was 101° and the maximum had been 103.6°. Dr. Dozier stated that this was a mild case and that commonly the temperature reached 105° and 106°. He said also that the eruption often became confluent with severe hemorrhages into the skin.

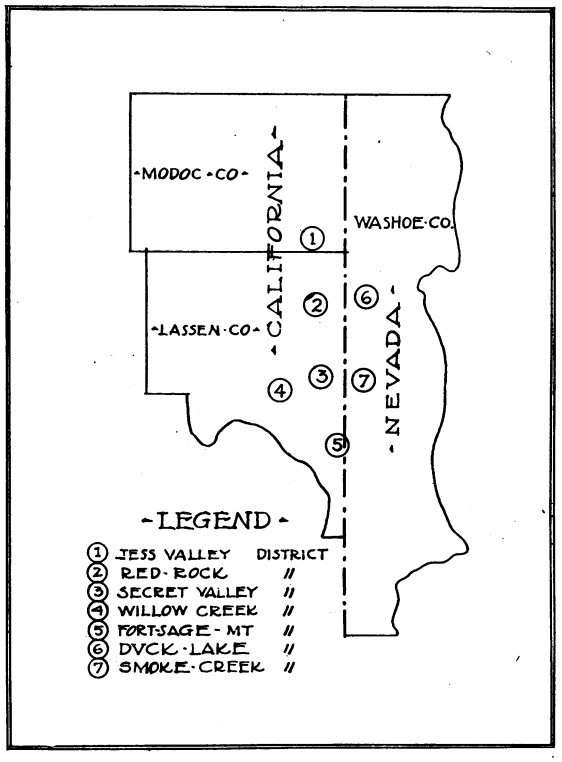
The second case was seen only in the prodromal period. The patient was a sheep herder who passed through Susanville on his way to Reno. When seen by Dr. Dozier and myself this man showed no signs of the disease excepting the evidence of tick bites and the beginning of a macular roseolar eruption over the forehead and chest. Unfortunately the patient could not be kept under observation so that a positive diagnosis was impossible. However, he had when seen, the usual prodromal symptoms of chilliness, headache, pains in his muscles, joints and bones, slight increase in pulse and respiration, slight rise in temperature, constipation, and general malaise. The infection was contracted in the Willow Creek District.

The next patient was B. F. H., another State Inspector, who was in the early stage of the disease. This patient, who also had contracted the disease in the Willow Creek district, had been ill for about a week. For several days he

had felt slightly indisposed but had kept at his work. Then he had been taken with a feeling of chilliness, severe headache, and severe muscle, bone, and joint pains. He had been able to be up and around for several days more, but three days before I saw him, he had gone to bed on account of the pain, headache and general malaise. When seen his temperature was slightly elevated, the body pains and headache were very severe, and there was a faint macular roseola over the face and chest. The patient was sent at once to the University of California Hospital in San Francisco. After his arrival there he did not develop a typical case of the disease as his temperature dropped to normal and remained so, and the typical petechial eruption did not appear. However, I feel that the typical prodromal symptoms following tick bites received in a region known to be infected, and the high large mononuclear count [5 4] (12% and 18% on two different counts) make justifiable the diagnosis of Rocky Mountain spotted fever. Typhoid and paratyphoid were ruled out by blood cultures and by agglutination tests. The fact that the petechial eruption did not appear does not invalidate the diagnosis, for a type of the disease in which the eruption is lacking is not uncommon. Wilson and Chowning [6] said that, "Several physicians, however, recognize in addition a mild type in which there are no 'spots,'" and, "That such cases exist there can be no doubt," while Ricketts [7] stated that, "Those that have had the greatest experience with the disease in man recognize a mild type in which the characteristic eruption is absent."

The fourth case was that of Mrs. S., who contracted the infection in the Fort Sage Mountain district. At the time I saw the patient in company with Dr. Dozier, all of the acute symptoms had subsided and her temperature had been normal for several days. However, the eruption was still present and was much worse and more marked than in any of the other cases. The spots were so numerous that there was hardly a place on her body or limbs where a fifty-cent piece would not have covered one or more of them. In many places the eruption had become confluent with the formation of large ecchymotic spots. Mrs. S. gave a history of a single tick bite received eight days before the beginning of her illness, and had had a typical case of the disease.

That at least three of these cases were Rocky Mountain spotted fever and that the disease does exist in California, I think there can be no doubt. The absolutely typical histories, the fact that the disease comes on only after the patient has been bitten by ticks, the characteristic eruption in most of the cases, and the seasonal and geographical distribution make the diagnosis unquestionable. Typhus fever, with which it is most liable to be confused, is ruled out by the fact that Rocky Mountain spotted fever occurs only in the spring and early summer, corresponding exactly with the tick season and in contrast to the winter prevalence of typhus, that it is rural rather than urban, that it occurs in persons not infested with lice, and that it is in no way associated with poverty, filth, or congestion. Typhus is still further eliminated by the fact that associates, attendants, and close contacts with patients suffering with Rocky Mountain spotted fever do not contract the disease, and so far as my investigation has gone I can agree with the statement of Anderson [5] that, "Two cases of spotted fever have never been known to occur in the same family the same season." The differentiation from the other exanthems is easily made by the fact that Rocky Mountain spotted fever is never contagious at any stage of the disease no matter how close the contact with non-immunes,



and by the character and distribution of the eruption.

This disease was first recognized in California by Drs. Coppedge and Gibson of Alturas, Modoc County, in 1903. At that time Dr. Gibson wrote a short article for the local newspaper and so far as I have been able to find out this is the first published account of the disease in California. Dr. Gibson also has a photograph of a patient taken at the height of the eruption, which is confirmatory evidence that the diagnosis was correct. It was not until 1908 that the disease was discovered in northern Lassen County by Dr. Kennedy of Eagleville, Modoc County, and three years later that Dr. Dozier of Susanville, Lassen County, diagnosed the first case in the southern part. Altogether I have had reports on thirty-eight cases, six in Modoc County and thirty-two in Lassen. These cases were reported to me as follows: Dr. Dozier, Susanville, 16; Dr. Kennedy, Eagleville, 11; Dr. Drucks, Susanville, 2; Dr. Walsh, Susanville, 2; Dr. Sanderson, Lassen,

1; Dr. Gibson, Alturas, 4; Dr. Coppedge, Alturas, 1; Dr. Stiles, Alturas, 1. The following table shows the distribution and mortality of the cases by years:

	Modoc		Lassen	
	Morbidity	Mortality	Morbidity	Mortality
1903	1			
1904	1	1		
1905				
1906				
1907				
1908			1	1
1909	1		2	
1910				
1911			3	1
1912	1		3	1
1913			2	
1914			2	
1915			11	2
1916*	2		8	
Total	6	1	32	5

* Figures for 1916 not completed.

From the above table it is seen that of the six cases in Modoc one died, and of the thirty-two in Lassen five terminated fatally, giving a mortality of about sixteen per cent. Thus the type of disease in California is apparently not so severe as in the Bitter Root Valley of Montana,[6] [1] where the mortality is approximately seventy-five per cent., nor as light as in Idaho, where the mortality is three to four per cent.

The infected areas in Modoc and Lassen Counties were located as far as possible. The six cases reported in Modoc all contracted the disease in Jess Valley, a small valley lying close to the Modoc-Lassen border and just west of the Warner Range of mountains. The thirty-two cases reported in Lassen were infected in four different districts. Four contracted the disease in the Fort Sage Mountain district in the southeastern part of the county, seven in the Willow Creek district in the central part, eight in the Secret Valley district in the east central part, and twelve in the Red Rock or Madeline Plains district in the northeastern section. One case, which occurred in 1914, seems to have contracted the disease within the town of Susanville. If this is so, this case does not fall into one of the four districts, but as this is the only infection reported in Susanville, I feel that either the history was not gone into carefully enough or, what is more probable, that a tick was carried in from one of the infected areas. This could easily have been done by a herder or other person from the Willow Creek district, for which Susanville is the purchasing center. Persons from this district frequently come into Susanville with their dogs, so that the infected ticks might easily have been brought into the town.

That these districts may not be definitely located and that they may have to be changed after a more thorough investigation is admitted. However, all of the information so far collected seems to confine the infection to these five areas and it remains for future investigation to either confirm or disprove this hypothesis.

From Fricks'[3] map one might be led to infer that the disease came into California through Oregon. This map shows infected areas in both Klamath and Lake Counties, Oregon, which border Modoc on the north. While the disease undoubtedly does exist in these counties, it is to a much less extent than in Baker, Crook and Grant Counties, and these foci of infection are 180 miles from the California border. Fricks does not give any infected area, either on the map or in the text in Washoe County, Nevada, but from recent reports it would seem that there have been at least ten cases in this county. These cases were infected in the Duck Lake and Smoke Creek districts. As the Red Rock and Secret Valley districts in Lassen County are just west of these districts and are in fact continuous with them, it seems highly probable that the disease reached California along this route rather than from Oregon. This supposition is further borne out by the fact that no cases have been reported from northern Modoc bordering the Oregon line.

While in Lassen County the Willow Creek and Secret Valley districts were visited and ticks collected. These were identified as Dermacentor andersoni (Stiles), the chief transmitter of Rocky Mountain spotted fever, and the classification was confirmed by Dr. K. F. Meyer, Associate Professor of Tropical Medicine in the Hooper Institute for Medical Research. Since my return, ticks of the same species have been sent me from the Fort Sage Mountain district. This agrees with the findings of Bishop[8] and of Hunter and Bishop,[9] who reported in 1911 the presence of this tick in Modoc and Lassen Counties, California.

It is hoped that further investigations will be carried on next spring when the epidemiology can be more thoroughly worked out, the best methods of tick control for these district decided upon, and laboratory studies of the virus carried on.

CONCLUSIONS.

1. Rocky Mountain spotted fever has existed in California for a much longer period and to a far greater extent than has hitherto been supposed.

2. There are probably five main infected areas, one in Modoc County and four in Lassen.

3. The disease is not as severe in California as in Montana, nor as light as in Idaho.

4. The infection probably entered California through Nevada rather than Oregon.

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THE CONSIDERATION OF RECTAL AND COLONIC DISEASE IN LIFE INSURANCE EXAMINATIONS.*

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When making a life insurance examination the careful examiner does not rely upon any of the applicant's statements regarding his present physical condition, but by inspection he notes whether the general appearance is healthy or unhealthy; by inspection, palpation, percussion and auscultation he secures accurate information concerning the heart and lungs; by examination of the reflexes, etc., he seeks evidence of disease or functional derangement of the brain and nervous system; by palpation and with the sphygmomanometer he determines the condition of the blood vessels; by an urinalysis he sees if the kidneys and bladder are free from any tendency to disease; by the thermometer he notes the untoward rise in temperature which betrays latent disease; and by the scales and the tape he finds variations from normal in weight and measurements. All this important data is obtained only by direct examination and by precise methods.

It is evidently not deemed of much importance by the life insurance companies, that their medical examiners need determine accurately the condition of the rectum and colon—not to mention the balance of the alimentary canal—for they seem willing to assume that these organs are free from disease solely from the favorable answers given by the applicant to routine printed questions asked by the examiner. That this is a fallacy, inasmuch as it paves the way to the acceptance of poor risks, and occasionally to the rejection of a good one, I shall endeavor to show in this paper.

Among the routine questions which the applicant is required to answer are: "Have you now or have you ever had, (1) chronic diarrhœa; (2) a fistula, or any disease of the rectum." The replies to these queries might perhaps be taken at their face value were it not for several adverse reasons. One is that the answer may be given honestly, but is often not worthy of consideration on account of the applicant's ignorance of what is really meant by the question. Another is that the questions are usually asked perfunctorily, and even casually, by the examiner, and are answered—almost invariably in the negative—in a like manner by the applicant.

In a fairly long experience, as an examiner, I can recall only one time when I received an affirmative reply. That was from a man 54 years of age. He freely volunteered the information that he had bleeding from his rectum, at intervals, for a number of years. He was otherwise safely insurable. A recto-sigmoidoscopic examination showed the presence of small hemorrhoids only. He was accepted by the company upon my statement that there was no malignancy, and that the hemorrhoids were not such as to demand an operation.

This remarkable absence from recto-colonic troubles in applicants for insurance is rather surprising. One would imagine that the proportion of sufferers from these ailments would be about the same among them, as among other persons seen in family or general clinical practice. The suspicion therefore arises that perhaps the main reason for the general denial is the ease with which these affections can be concealed from the examiner unless he makes an examination.

As an illustration, I recollect the case of a gentleman who was at the time under my care for an amebic colitis, yet he passed an examination and received a policy. Though previously having suffered for many years, he could be freed for long periods from all symptoms of the disease by a course of emetin injections. Still at intervals there were sharp recurrences. During a time when the disease was quiescent he passed the examination. It is probable that had more attention been paid to the questions and answers concerning the condition of his bowel and rectum, the suspicions of the examiner would have been aroused. If a rectal examination had been made, the presence of the disease would have been discovered, for at no time was the rectal mucosa without some evidence of amebic ulceration.

It cannot be said that this man was entirely at fault in the matter. While it is true that he had the disease for years, still, being a layman, he thought he was practically cured when his dysenteric symptoms yielded so readily to a few injections of a seemingly harmless drug, and particularly so as he otherwise felt and looked in the best of health. A history of former dysenteric attacks naturally was of no importance in his mind, so he could see no reason voluntarily to acquaint the examiner with all the facts about himself, especially as no very great effort was made to secure that information.

As amebiasis has been considered a disease which is met with only in the tropics, or in certain localities in our southern states, outside of these zones the average practitioner is not apt to consider the possibility of its presence. But those who are interested in recto-colonic diseases have learned that individuals who never have been in any of these localities often become infected; that amebiasis occurs more commonly than is generally suspected, and that the organism may be harbored in persons whose outward appearance shows no evidence of it.

It is common knowledge among rectal surgeons that the average individual knows little about his ano-rectal region, and that no matter what the pathological condition in his rectum may be, he generally attributes every symptom to "a slight attack of piles." Unless there is severe pain or itching, alarming bleeding, or annoying dysentery,

* Read at the 18th annual meeting of the American Proctologic Society, in Detroit, Mich., June, 1916.